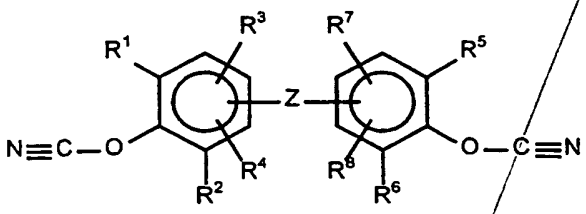
Claims:

1. Optical waveguide system or a structure or part thereof, comprising a resin composed of at least one polycyanate copolymer, obtainable by copolymerization of at least

one difunctional cyanate of formula II:



(II)

wherein R^1 to R^4 and R^5 to R^8 are independently from each other hydrogen, optionally substituted C_1-C_{10} alkyl, C_3-C_8-cycloalkyl, C_1-C_{10}-alkoxy, halogen, phenyl or phenoxy, the alkyl or aryl groups being unfluorinated, partly fluorinated or fully fluorinated, Z is a chemical bond, SO_2, CF_2 CH_2, CHF, $CH(CH_3)$, isopropylene, hexafluoroisopropylene, n- or iso-C_1-C_{10} alkylene, O, NR^9, N=N, CH=CH, C(O)O, CH=N, CH=N-N=CH, alkyl oxyalkylene having 1 to 8 carbon atoms, S, $Si(CH_3)_2$, and R^9 is hydrogen or C_1-C_{10} alkyl

with at least one monocyanate of the following formula I:

N≡C-O-R (I)

wherein R is a straight or branched non-aromatic hydrocarbon radical or a non-aromatic hydrocarbon radical comprising a cyclic structure, the radical having the formula $C(R')_2$-$CFR"_2$ wherein each R' is, independently from the other, hydrogen or fluorine or an optionally substituted, preferably fluorinated

alkyl or alkenyl group, and each of R" may independently be defined as R' or may have an arylic structure.

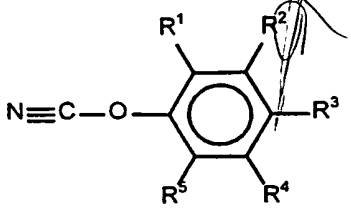
2. Optical waveguide system or a structure or part thereof according to claim 1, characterized in that the said polycyanate copolymer is obtainable by copolymerization of at least one difunctional cyanate of formula II, at least one monofunctional cyanat of formula I and at least one dicyanate having formula III:

$$N\equiv C-O-R^{10}-O-C\equiv N \qquad (III)$$

wherein R^{10} is a non-aromatic hydrocarbon group carrying at least one fluorine atom.

3. Optical waveguide system or a structure or part thereof according to claim 2, characterized in that R^{10} of formula III is a partly or fully fluorinated alkylene group having 1 to 15, more preferably 3 to 12 carbon atoms.

4. Optical waveguides system or a structure or part thereof according to any of the preceding claims, characterized in that the said polycyanate copolymer is obtainable by copolymerization of at least one difunctional cyanate of formula II, at least one monofunctional cyanate of formula I, optionally at least one dicyanate having formula III, and a monocyanate of formula IV



(IV)

wherein R^1 to R^5 are defined as in formula II.

5. Optical waveguide system or a structure or part thereof according to any of the preceding claims, characterized in that the said polycyanate copolymer is obtainable by copolymerization of at least one difunctional cyanate of formula II, at least one monofunctional cyanat of formula I, and at least one brominated monocyanate of formulas I to III, preferably of formula I, as defined above with the proviso that the monocyanates of formula I may be free of fluorine.

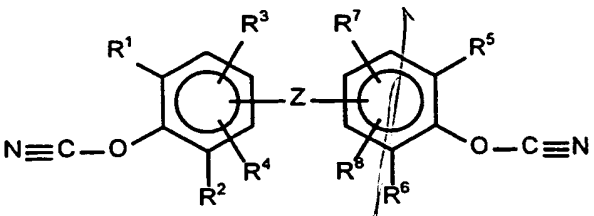
6. Optical waveguide system or a structure or part thereof according to any of the preceding claims, characterized in that the monocyanate of formula I as defined in claim 1 is used in an amount of at least 10%, preferably of at least 20% by mol per mol of the polycyanate copolymer.

7. Optical waveguide or a structure or part thereof according to any of the preceding claims, characterized in that the polycyanate copolymer has a glass transition temperature of from 100°C to 300°C and/or has a refractive index of about 1.35 to about 1.60 at 1.55µm.

8. Optical waveguide system or a structure or part thereof according to any of the preceding claims, characterized in that it is an optical fibre, a waveguide, a buffer layer, a cladding or a support for any of the said structures.

9. Optical waveguide system comprising a waveguide consisting of a resin composed as defined in any of claims 1 to 7, and a buffer and/or cladding consisting of a resin composed of a resin as defined in any of claims 1 to 7, but different from that of the waveguide, wherein the resin of the waveguide has a greater refractive index than that of the buffer and/or cladding.

10. Use of a polycyanate copolymer, obtainable by copolymerization of at least one polyfunctional cyanate selected from a difunctional cyanate of formula II:



(II)

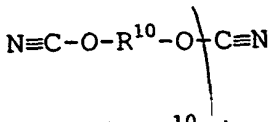
wherein R^1 to R^4 and R^5 to R^8 are independently from each other hydrogen, optionally substituted C_1-C_{10} alkyl, C_3-C_8-cycloalkyl, C_1-C_{10}-alkoxy, halogen, phenyl or phenoxy, the alkyl or aryl groups being unfluorinated, partly fluorinated or fully fluorinated, Z is a chemical bond, SO_2, CF_2 CH_2, CHF, $CH(CH_3)$, isopropylene, hexafluoroisopropylene, n- or iso-C_1-C_{10} alkylene, O, NR^9, N=N, CH=CH, C(O)O, CH=N, CH=N-N=CH, alkyl oxyalkylene having 1 to 8 carbon atoms, S, $Si(CH_3)_2$, and R^9 is hydrogen or C_1-C_{10} alkyl

with at least one monocyanate of the following formula I:

N≡C-O-R (I)

wherein R is a straight or branched non-aromatic hydrocarbon radical or a non-aromatic hydrocarbon radical comprising a cyclic structure, the radical having the formula $C(R')_2$-$CFR"_2$ wherein each R' is, independently from the other, hydrogen or fluorine or an optionally substituted, preferably fluorinated alkyl or alkenyl group, and each of R" may independently be defined as R' or may have an arylic structure, as a material in optical waveguide systems or structures or parts thereof, preferably of optical fibres, waveguides, buffers, claddings, or supports for such structures.

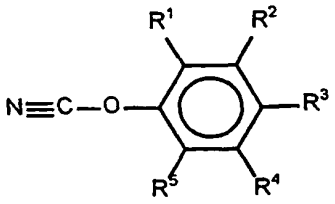
11. Use of a polycyanate copolymer according to claim 10, characterized in that the said polycyanate copolymer is obtainable by copolymerization of at least one difunctional cyanate of formula II, at least one monofunctional cyanat of formula I and at least one dicyanate having formula III:



(III)

wherein R^{10} is a non-aromatic hydrocarbon group carrying at least one fluorine atom, preferably a partly or fully fluorinated alkylene group having 1 to 15, more preferably 3 to 12 carbon atoms.

12. Use of a polycyanate copolymer according to claim 10 or 11, characterized in that the said polycyanate copolymer is obtainable by copolymerization of at least one difunctional cyanate of formula II, at least one monofunctional cyanate of formula I, optionally at least one dicyanate having formula III, and a monocyanate of formula IV



(IV)

wherein R^1 to R^5 are defined as in formula II.

13. Use of a polycyanate copolymer according to any of claims 10 to 12 10, characterized in that the said polycyanate copolymer is obtainable by copolymerization of at least one difunctional cyanate of formula II, at least one monofunctional cyanat of formula I, and at least one brominated monocyanate of formulas I to III, preferably of formula I, as defined above with the proviso that the monocyanates of formula I may be free of fluorine.

14. Use of a polycyanate copolymer according to any of claims 10 to 13, characterized in that the monocyanate of formula I as defined in claim 1 is used in an amount of at least 10%, preferably of at least 20% by mol per mol of the polycyanate copolymer.

15. Use of a polycyanate copolymer according to any of claims 10 to 14, characterized in that the said polycyanate copolymer has a glass transition temperature of from 100°C to 300°C and/or has a refractive index of about 1.35 to about 1.60 at 1.55µm.

16. Use of a polycyanate copolymer according to any of claims 10 to 15, wherein at least the materials used for the optical waveguide and for the buffer/and or cladding are those as defined in claim 10 and the material for the waveguide has a grater refractive index than that of the buffer and/or cladding.

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